REMARKS

Further examination of claims 39, 43, 44, and 46-57 is reported in the present, final Office Action. Claims 39, 50, 51, and 57 stand rejected under the judicially-created Doctrine of Obviousness-Type Double Patenting; claims 39, 44, and 49-57 stand rejected under 35 U.S.C. § 102(e); claims 39 and 43 stand rejected under 35 U.S.C. § 103(a); and claims 46-48 were objected to as being dependent upon a rejected base claim. The rejections and objection are addressed as follows.

First, applicants note that, as was instructed by the Examiner, an Abstract for this application has now been added as new page 52 of the application.

Double Patenting Rejection

Claims 39, 50, 51, and 57 stand rejected under the judicially-created Doctrine of Obviousness-Type Double Patenting over claims 1, 9-11, and 26 of U.S. Patent No. 6,126,938. This rejection is respectfully traversed.

This rejection is based on the Examiner's position that the present claims are generic to the cited claims of the '938 patent. As is noted above, claim 39, from which the other rejected claims depend, has been amended to specify that the immunogenic agent derived from Helicobacter of this claim is a preparation of inactivated Helicobacter bacteria, a Helicobacter cell lysate, or a Helicobacter polypeptide or peptide in purified form. (This amendment is supported in the present application at, for example, page 13, lines 3-7.) The teaching of the '938 patent relied upon in supporting this rejection recites the use of a plasmid encoding a Helicobacter antigen, and such a plasmid is not a species of the immunogenic agents of the present claims. Further, claim 39 has been amended to clarify that the lipid compound used in

the method of this claim is not in the form of a liposome, while the lipid compound in the cited teachings of the '938 patent is in such a form. Thus, a genus-species relationship does not exist between the present claims and those of the '938 patent, and this rejection should therefore be withdrawn.

Rejection under 35 U.S.C. § 102(e)

The rejection of claims 39, 44, and 49-57 under § 102(e) as being anticipated by U.S. Patent No. 6,126,938 has been maintained, with the Examiner stating that applicants' prior amendment to claim 39 permits the use of liposomes to be within the method of this claim. Applicants respectfully request that this rejection be withdrawn, as claim 39 has been clarified to state that the lipids used in the method of this claim are not in the form of liposomes.

Rejections under 35 U.S.C. § 103(a)

Claims 39 and 43 remain rejected under § 103(a) for obviousness over U.S. Patent No. 6,126,938, in view of U.S. Patent No. 5,283,185. The Examiner bases this rejection on the teachings of the '938 patent of the use of DC-chol liposomes for administration of a plasmid encoding a Helicobacter sequence, and the teachings of the '185 patent of the use of DC-chol/nucleic acid agent dispersions to facilitate transfer of DNA into mammalian cells.

This rejection can now be withdrawn because, as is noted above, the present claims have been amended to specify that the Helicobacter agent of these claims is a preparation of inactivated Helicobacter bacteria, a Helicobacter cell lysate, or a Helicobacter polypeptide or peptide in purified form. Such antigens are not mentioned in the '185 patent and, thus, motivation to administer such agents by the use of a dispersion certainly cannot come from the

'185 patent. Such motivation also cannot come from the '938 patent, which describes the use of lipids in the form of liposomes, not as dispersions. Applicants thus respectfully request that this rejection be withdrawn.

Claims 39 and 43 also remain rejected for obviousness over the '938 patent, in view of U.S. Patent No. 4,855,283. This rejection is based on the Examiner's position that although the '938 patent teaches bacterial antigens that are not in the form of a dispersion, use of such a form to induce an immune response against such antigens would have been obvious, based on the teachings of the '283 patent of the use of dispersions to increase the immune response (and in particular, macrophage activation) against bacterial agents.

Applicants respectfully disagree with this rejection, as there is no basis for combining the teachings of the cited references. In particular, as was stated by the Examiner, the '938 patent does not teach the use of dispersions, as is required by the present claims. Although the '283 patent does teach the use of dispersions, these dispersions are of a completely different type of compound than what is used in the methods of the present claims. The compounds of the '283 patent are glycolipopeptides, not cationic lipids of the type of the present claims. The Examiner has not provided any basis for concluding that observations of the efficacy of glycolipopeptides in inducing an immune response would provide any indication of how a dispersed cationic lipid would perform. Absent such an indication, there certainly would not have been any motivation to combine the teachings of these references, not to mention an expectation of success in carrying out the methods now claimed.

Further, the glycolipopeptides of the '283 patent bear very little structural similarity to the cationic lipids of the present claims, and these compounds have very different properties, which would certainly impact the manner in which they interact with one another, the molecules that

they may be useful in delivering, the environments in which the delivery is to take place, and the cells to which they are delivering. As just one of many examples, the cationic lipid molecules of the present claims include a lipophilic group derived from cholesterol, which is a molecule including four rings and an alkyl side chain. The compounds of the '283 patent do not include any structures resembling cholesterol. The compounds of the '283 patent also do not include a cationic amine group, which is required by the lipid compounds of the present claims.

Because of the differences between the compounds of the present claims and those of the '283 patent, there certainly would not have been any expectation that merely the form in which a compound is administered (e.g., a dispersion) would have the same effect as a completely different type of compound in the same form. Applicants thus respectfully request that this rejection be withdrawn.

Information Disclosure Statement

Applicants note that an Information Disclosure Statement was filed in this case on August 20, 2001, and that an initialed copy of the corresponding 1449 has not been forwarded to them. Applicants thus request that an initialed copy of that 1449 be forwarded to them with the next Office Action in this case.

CONCLUSION

Applicants submit that the claims are in condition for allowance, and such action is respectfully requested. If there are any charges or any credits, please apply them to Deposit Account No. 03-2095.

Respectfully submitted,

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PATENT TRADEMARK OFFICE

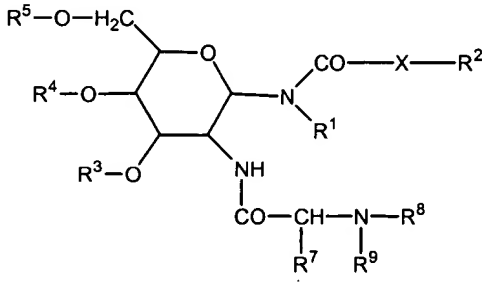
Version of Amended Claim with Markings to Show Changes Made

39. (Twice Amended) A method of inducing a T helper 1-type immune response against Helicobacter in a patient, said method comprising administering to the patient an immunogenic agent derived from Helicobacter and a compound that promotes induction of a T helper 1-type immune response against Helicobacter, said immunogenic agent being a preparation of inactivated Helicobacter bacteria, a Helicobacter cell lysate, or a Helicobacter polypeptide or peptide in purified form, and said compound being selected from the group consisting of:

(i) a saponin purified from an extract of *Quillaja saponaria*; and

(ii) a cationic lipid or a salt thereof, wherein said lipid is a weak inhibitor of protein kinase C and has a structure that comprises a lipophilic group derived from cholesterol, a bonding group selected from carboxyamides and carbamoyls, a spacer arm consisting of a branched or unbranched linear alkyl chain of 1 to 20 carbon atoms, and a cationic amine group selected from primary, secondary, tertiary, and quaternary amines, wherein said lipid is not provided in the form of a liposome [when administered in the absence of any additional compounds that promotes induction of a T helper 1-type immune response against Helicobacter; and

(iii) a glycolipopeptide of formula (I):



in which

R^1 represents an alkyl group that is saturated or unsaturated once or several times and comprises 1 to 50 carbon atoms;

X represents $-CH_2-$, -O-, or -NH-;

R^2 represents a hydrogen atom or an alkyl group that is saturated or unsaturated once or several times and comprises 1 to 50 carbon atoms;

R^3, R^4, and R^5 each represent, independently of each other, a hydrogen atom or an acyl-CO-R^6 group, in which R^6 represents an alkyl group comprising 1 to 10 carbon atoms;

R^7 represents a hydrogen atom or a C_1-C_7 alkyl, hydroxymethyl, 1-hydroxyethyl, mercaptomethyl, 2-(methylthio)ethyl, 3-aminopropyl, 3-ureidopropyl, 3-guanidylpropyl, 4-aminobutyl, carboxymethyl, carbamoylmethyl, 2-carboxyethyl, 2-carbamoylethyl, benzyl, 4-hydroxybenzyl, 3-indolylmethyl, or 4-imidazolylmethyl group;

R^8 represents a hydrogen atom or a methyl group; and

R^9 represents a hydrogen atom or an acetyl, benzoyl, trichloroacetyl, trifluoroacetyl, methoxycarbonyl, t-butyloxycarbonyl, or benzyloxycarbonyl group].

Pending Claims After Entry of Amendment

39. (Twice Amended) A method of inducing a T helper 1-type immune response against Helicobacter in a patient, said method comprising administering to the patient an immunogenic agent derived from Helicobacter and a compound that promotes induction of a T helper 1-type immune response against Helicobacter, said immunogenic agent being a preparation of inactivated Helicobacter bacteria, a Helicobacter cell lysate, or a Helicobacter polypeptide or peptide in purified form, and said compound being selected from the group consisting of:

(i) a saponin purified from an extract of *Quillaja saponaria*; and

(ii) a cationic lipid or a salt thereof, wherein said lipid is a weak inhibitor of protein kinase C and has a structure that comprises a lipophilic group derived from cholesterol, a bonding group selected from carboxyamides and carbamoyls, a spacer arm consisting of a branched or unbranched linear alkyl chain of 1 to 20 carbon atoms, and a cationic amine group selected from primary, secondary, tertiary, and quaternary amines, wherein said lipid is not provided in the form of a liposome.

43. The method of claim 39, wherein the compound is a cationic lipid made in the form of a dispersion.

44. The method of claim 39, wherein the compound is the cationic lipid 3-beta-[N-(N',N'-dimethylaminoethane)-carbamoyl]cholesterol (DC-chol) or a salt thereof.

49. The method of claim 39, wherein the immunogenic agent derived from Helicobacter is selected from the group consisting of a preparation of inactivated Helicobacter bacteria, a Helicobacter cell lysate, and a peptide or a polypeptide from Helicobacter in purified form.

46. (Amended) The method of claim 39, wherein the T helper 1-type immune response is characterized by a ratio of ELISA IgG2a:IgG1 titres that is greater than or equal to 1:20, when said method is carried out in a mouse, the IgG2a and IgG1 being immunoglobulins induced against Helicobacter.

47. The method of claim 46, wherein the T helper 1-type immune response is characterized by a ratio of ELISA IgG2a:IgG1 titres that is greater than or equal to 1:10.

48. The method of claim 47, wherein the T helper 1-type immune response is characterized by a ratio of ELISA IgG2a:IgG1 titres that is greater than or equal to 1:2.

50. The method of claim 49, wherein the immunogenic agent derived from Helicobacter comprises the UreB or UreA subunit of Helicobacter urease.

51. The method of claim 39, wherein the immunogenic agent derived from Helicobacter is derived from *Helicobacter pylori*.

52. The method of claim 39, wherein the immunogenic agent and the compound are administered to the patient by a systemic route.

53. The method of claim 52, wherein the systemic route is the strict systemic route.

54. The method of claim 52, wherein the immunogenic agent and the compound are administered to the patient by a systemic route in a region of the patient that is situated under its diaphragm.

55. The method of claim 52, wherein the immunogenic agent and the compound are administered to the patient by a systemic route in the dorsolumbar region of the patient.

56. The method of claim 52, wherein the systemic route is selected from the group consisting of the subcutaneous route, the intramuscular route, and the intradermal route.

57. The method of claim 39, wherein the immunogenic agent and the compound are administered to the patient twice or three times by a systemic route during the same treatment.